

Calibration of the photon spectrometer PHOS of the ALICE experiment

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The procedure of the energy calibration of the highly granulated electromagnetic calorimeter PHOS of the ALICE experiment is presented. PHOS consists of 12544 PbWO₄ crystals with Avalanche PhotoDiodes (APD) as photodetectors. It is accompanied by an LED monitoring system and cooling plant which maintains a stable temperature of the crystals at -25° C.

After this latest and new calibration procedure was applied to the pp-collision data at $\sqrt{s} = 13$ TeV, we obtained π^0 and η peak positions close to their PDG mass values over a wide p_T ranges with widths $\sigma_m^{\pi^0} = 4.40 \pm 0.03$ MeV/ c^2 and $\sigma_m^\eta = 15.3 \pm 1.0$ MeV/ c^2 , respectively.

These methods which were used to perform relative gain calibration, to estimate geometrical alignment and corresponding correction of the absolute energy scale, to calculate the time-dependent corrections and to evaluate the non-linearity corrections, will be discussed and illustrated by the PHOS performance in proton-proton collisions at $\sqrt{s} = 13$ TeV.

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